White Paper

The PHN Officer's Guide

to

Really Useful Information Technologies

William H. Trayfors

Chairman

Washington Decision Support Group, Inc.

and

John Jerome

Deputy Director

Center for International Health Information

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Background

More than ever before, today's information technologies (IT) include a rich set of tools and techniques which can and should be employed by USAID PHN officers in the field and in Washington. PHN officers who choose to inform themselves and their colleagues about relevant information technologies -- and who go on to put their knowledge to use in the workplace -- will find themselves working smarter, faster, and with more effectiveness than ever before. In a working environment where USAID officers are encouraged to do "more with less", choosing and employing appropriate information technologies to get the job done more efficiently just makes good sense.

In this spirit, the organizers of the ANE-SOTA workshop in Chiang Mai (September 29-October 2, 1997) have built in several plenary and hands-on working group sessions to introduce current technologies and information resources to workshop participants. They also have commissioned the production of a CD-ROM -- especially for USAID PHN staff -- to be distributed worldwide, as well as this White Paper to accompany the CD-ROM.

Introduction

In the main, this paper includes a brief overview of IT tools and techniques, and information resources of particular interest to the USAID PHN officer. It makes no pretense of complete coverage of the field, since: (a) the field is innovating and evolving at a pace unparalleled in the human experience; and (b) many technologies just aren't applicable to USAID's present situation (especially given the current hardware/software/communications configurations typical in the field).

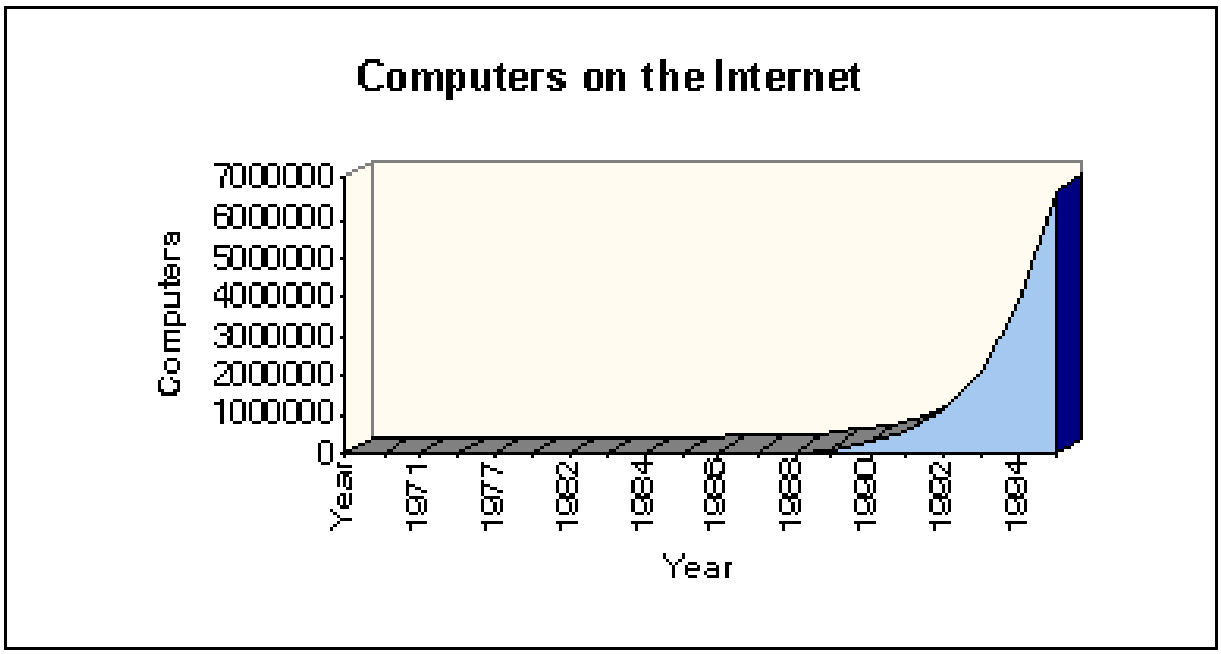
This paper has two principal sections: *The Technology Scene* and *The Information and Services Scene.* In the first, a survey of appropriate technologies is presented. This is geared to those for whom IT is just a blur, as well as those who have some familiarity with current technologies. The second section presents an overview of some of the information and resources which are now available to the PHN officer, and which can help to inform, persuade, plan, manage, and evaluate. A final section includes recommendations for hardware and software which, to the authors, seem necessary as tools for the PHN officer to make effective use of the available technologies.

We hope you will find this paper informative and challenging.

The Technology Scene

The Internet

Within the past three years the Internet has become the most talked about "new" technology. In fact, it is several decades old[(1)] but until recently was known only to a relatively small group of scientists, students, and computer afficionados. It was the arrival of the World Wide Web (WWW) in 1993 which suddenly transformed the Internet from a relatively obscure scientific and military backwater to perhaps the most important new technology tool of our time. Truly explosive growth in use of the Internet has occurred since that time as can be seen in the chart below.



The point-and-click *web browser* (a la Netscape's *Navigator* and Microsoft's *Explorer*) allow even those with no previous computer background to do interesting and useful things on the Internet's WWW with only a few minutes of training.

For example, with just a few clicks of the mouse you can:

get the latest weather (text, technical discussion, satellite, radar, other maps);

order a new car or new computer or practically anything else you want;

look for a new house or apartment to rent or buy;

check on the status of a FEDEX or UPS shipment;

look for and book a low price air fare, including hotels & car rental;

obtain detailed information on virtually any subject you can think of, no matter how obscure or esoteric;

check any movie, video, song, actor/actress or other entertainment item;

check the latest stock report or manage your checking account(s) on-line;

download the latest software package or upgrade;

check the latest news items from CNN, the Washington Post, the New York Times, the FBIS, etc.

obtain detailed country data from the CIA's public website;

obtain scientific or other data from any of the literally millions of websites around the world; or

do most anything imaginable that can be done over wires.

If you haven't yet "surfed the Web", you owe it to yourself to spend at least an hour or so with someone who has, and explore this incredible new tool.

Internet E-mail. Although much media attention has been focused on the World Wide Web portion of the Internet, e-mail remains by far the most popular component of the Net. With an Internet e-mail account, you are instantly a member of the on-line community of at least 30 million persons worldwide. You can exchange messages with anyone on the Net, and can even exchange documents, slide shows, programs, spreadsheets, databases, etc. with many of them.(2)

Intranets and Extranets are the latest rage. By one estimate, $29 billion will be spent on them next year. An Intranet is simply a *private Internet*, i.e., a network which is internal to an organization and which makes use of Internet technologies. It may or may not be connected to the larger Internet, depending on its purpose and the policies of its owner. An Intranet has several advantages over more conventional types of internal networks (LAN/WANs)(3). Among these are lower cost to setup and administer, and much lower cost in training and upgrades (this is important to any organization, since the real cost of maintaining each PC in a corporate environment is between $7,000 and $13,000 per year!).

Intranets do not necessarily replace LANs and WANs, but are often built on top of them. *Extranets* are private Intranets which are extended to include certain trusted partners. For example, if G/PHN had an Intranet it might be extended to include the CAs and other business partners, but would not be open to the rest of the world.

Databases, Spreadsheets, and Word Processors are the essential building blocks of business applications. The good news is that they have become more powerful, more graphics intensive, and easier to use than ever before. Unfortunately, they have also become much, much larger in size and are, in part, responsible for the derogatory industry term, "bloatware". For example, the most popular word processing packages -- Corel Word Perfect and Microsoft Word -- each contain many hundreds of features which the average user will never use. This is a result of the "feature wars" in the software industry in which each software manufacturer tries to build-in more features than the competition. In practical terms, this means that you need a larger hard disk, more memory, and faster processor chips to handle the increased load(4).

Compatibility Issues. A continuing problem with word processors, spreadsheets, and database software is that of file compatibility between the different manufacturer's products and, in the case of Microsoft, the problem of backward compatibility with earlier versions of the same product. These problems mean that it is often difficult to share documents, spreadsheets, and databases with others who may be using a different software package, or an earlier version of the same one. *Word Perfect* has wisely maintained the same file structure since version 6.0 (i.e., versions 6,7, and 8 share the same file structure). Formatting may be different among the versions, however, meaning that a file created in WP6.1 may print differently in WP8.0....a relatively minor problem. A Microsoft *Access97* database, however, is not accessible to users of, e.g., *Access 2.0* unless the *Access97* owner goes through a rather tortuous process to produce an *Access 2.0* version to share with a colleague. The other components of Microsoft Office97 (*Word*, *Excel*, and *Powerpoint*) all have a direct capability to save to earlier versions.

Quick View Plus. A nice solution to the compatibility problem can be found with a product called *Quick View Plus* (INSO Corporation, http://www.inso.com). This is an inexpensive program which can

function either as a standalone or as a helper application to your web browser and which allows you to view and print files which are in several hundred formats. Thus, if someone sends you a dBase IV database file and you don't have dBase installed on your computer, you can still view or print the file quite easily. QVP is available for Windows 3.x and Windows95/NT operating systems, and installs automatically as a helper to Netscape *Navigator* and Microsoft *Explorer*. An evaluation copy of this program is contained on the CD-ROM prepared for the Chiang Mai Workshop.

Adobe Acrobat. In the case of documents, another excellent solution may be found in the use of the *Adobe Acrobat Reader*. The documents submitted by the CAs for inclusion on the PHN CD-ROM, for example, were originally in several formats: *WordPerfect*, Microsoft *Word*, *PostScript* (print files), Macintosh *Quark*, and *PageMaker* files. You'd have to be a real power user to be able to read all these formats. Solution: the files were all converted to the same Adobe PDF format (using Adobe Acrobat 3.01, a $295 software package). These files may now be viewed in their original state, complete with graphs, charts, etc., by almost anyone using any type computer, since the *Adobe Acrobat Reader* is available free-of-charge for many popular computer platforms. Two versions of this *Reader* (for Windows 3.x and Windows 95/NT) are contained on the PHN CD-ROM. Others are available for download from the Adobe website (http://www.adobe.com).

HTML Publishing. One very useful feature of the new word processors, spreadsheets, and databases is their ability to publish to HTML(5), the format in general use on the WWW. This makes it very easy to publish information to be put up on the WWW or on an Intranet. All of the leading Office Suites(6) now have this feature.

Presentation Software

One way to work more persuasively with your colleagues and counterparts is to use presentation tools to help get your ideas and analyses across. Charts and graphs, maps, and slide shows (which can integrate these) can often be used with considerable impact on those whom you wish to influence.

Slide shows. Three of the more popular tools for making such presentations are: Microsoft's *PowerPoint*, Lotus' *Freelance Graphics*, and Corel's *Presentations*. They probably need no further introduction, since you'll be seeing a lot of them at the Chiang Mai Workshop. You should know, however, that the new versions have the ability to import graphics, spreadsheets, etc., to link to other tools (e.g., net browsers), and to export entire presentations to HTML format so that they may be viewed with a web browser. The new versions also support animation and sound effects. Presentations can be output as overhead slides, computer slides, or printed handouts.

Charts and Graphs. These are old hat by now, but can still be very effective in transmitting ideas and in simplifying difficult concepts. A sampling of PHN charts and graphs is contained on the PHN CD-ROM to stimulate ideas. Charts and graphs can be generated in several different ways, e.g., through use of spreadsheets, charting software, databases, presentation packages, and/or dedicated analytical packages such as *Demographit* and *SPECTRUM*.

Mapping. Thematic mapping is little used in the PHN area, but can be very useful as a presentation tool. One has to be very careful, however, not to overreach. It is fully within the capability of the average PHN office to prepare a colorful map depicting, e.g, the health infrastructure in a country, the areas where USAID and other donor programs are operating, etc. One could easily map provinces or districts by level of, e.g., contraceptive prevalence, HIV incidence, cholera, etc. Tools such as EPIMAP and MapInfo are relatively easy to use and can handle this level of mapping with ease (see examples on CD-ROM).

Such efforts are not to be confused with GIS[7] mapping, however. GIS software is expensive to buy and very expensive to use with any precision, particularly if synoptic data such as satellite-derived information is to be overlaid. Resolving the problems of multiple and nonstandard map projections, digitizing, "rubber sheeting", data calibration, polygon overlay, raster/vector data integration, etc. is way beyond the resources of PHN offices or, indeed, most USAID missions.

Nevertheless, attractive, colorful, and informative maps should be counted among the tools in the PHN officer's arsenal to help analyze, inform, and persuade. Several of the USAID CAs have the ability to produce such maps on request (see section below on available information and services).

Analytical and Planning Software

Several software applications are available to help the PHN officer to analyze and to plan. A brief description of three such packages - all contained on the CD-ROM - is given below.

SPECTRUM. This product was developed by The Futures Group, integrating four separate programs in an attractive and easy-to-use Windows format. Included are:

FamPlan, Version 4: A Computer Program for Projecting Family Planning Requirements

AIM: A Computer Program for Making HIV/AIDS Projections and Examining the Social and Economic Impacts of AIDS

DemProj: A Computer Program for Making Population Projections

RAPID: A Computer Program for Examining the Socio-Economic Impacts of Population Growth

Demographit. This graphics-intensive program was developed by Macro International. At present, it contains only data for India. Data for other countries could be developed on request. Demographit is an easy-to-use tool for analysis and presentation of PHN data. Colorful and informative maps, bar graphs, and pie charts can be produced very quickly, can be combined into a slide show for presentation and/or may be printed out individually. To learn more about this program and its potential application to data from your country, contact David Cantor at Macro International (cantor@macroint.com). Demographit is contained on the CD-ROM.

PolicyMaker. This interesting software package for Windows was developed by Michael Reich at Harvard University. It is a tool to analyze the current policy scene in very great detail, and to formulate actions to impact on current policy. A functional but limited version of this program is contained on the CD-ROM (PolicyMaker Lite). If you find it useful, you may wish to purchase the full version from the author.

In the next section, we begin an outline of the incredible array of PHN information and services now available to help you on the job.

The Information Services Scene

Population, Health and Nutrition Resources via the Internet

Compared to the industrialized world, information on population, health and nutrition conditions and interventions in developing countries is limited in both quantity and quality. Scarcity simplifies the search process since there are only a few good sources to explore, but the lack of accurate and reliable data on developing countries complicates PHN project design, development and management tasks. USAID has long recognized the need for high quality data and for the improvement of PHN information systems in the developing world. For the past twelve years, the Demographic and Health Surveys (DHS) have been the single best source of PHN information for the countries in which the surveys have been conducted. Beginning this fall, USAID will launch the new MEASURE project which is intended to not only enhance data adequacy, quality, and accessibility for performance monitoring and program management, but also to improve and strengthen information systems within the countries where USAID is working. While we are waiting for MEASURE to get up and running, there are some interesting and potentially useful websites that contain information PHN Field Officers may want to explore.

Getting Started. Most of these sources are easily accessible through the Internet, but one does not need a long list of Internet addresses to get started. All that is needed is one or two good sites from which to begin; most websites offering PHN information also contain linkages to many other sites providing similar information. If the initial site doesn't have the information you're seeking, a simple click on one of the links will take you to another site. Furthermore, you can "bookmark" any sites visited that you may want to return to, thereby simplifying subsequent searches.

Some websites contain mostly statistical data while others focus on textual information like news of recent happenings in the PHN field or articles on research or policy. Some sites also concentrate more on Population issues and data while others are more oriented to Health and Nutrition. You can build your own Internet "library" of resources that specifically meet your needs and fit your preferences. Although you can begin almost anywhere, the USAID web site (http://www.info.usaid.gov) is a good place to start. From this site, one can access the major compilers of data like Macro International (DHS), US Bureau of Census, World Bank, and various UN Organizations. The USAID site also provides links to many Cooperating Agencies (CA's) in the PHN sector. A copy of this website (as of August 27, 1997) is included on the CD-ROM.

Two other good Internet starting points are the Population Reference Bureau site, particularly for Population information (http://www.popnet.org) and the Center for International Health Information site for Health and Nutrition information (http://www.cihi.com). The PRB site is principally a reference site for finding needed information at other web locations. One especially interesting feature of this site is that country-specific information sources are provided through the *Organizational Sources* and *Clickable World Map* options. Using this site, one can quickly link to Indonesia's Bureau of Statistics or Family Planning Coordinating Board's web sites, for example, or can find a list of NGO's currently working in Vietnam.

The CIHI site also contains many useful linkages, but also provides *Country Health Statistical Reports* which are a summaries of PHN statistics and trends for almost every developing country using a variety of sources. These reports are provided in two formats: (1) the *pdf* format includes graphs of statistical trends and comparisons, and (2) the *text* format contains only tables of data, but is much faster and easier to view and download than the *pdf* files, especially for those with limited computer hardware capabilities.

United Nations Databases. Several of the UN entities working in the PHN sector provide

information via their web sites. The following is a list of UN sites which may be of interest.

UNICEF (http://www.unicef.org): This site includes a database of indicators from the most recent edition of *The Progress of Nations*. Statistics are shown by country and users can download the database. Following the basic tables more detailed information is shown on immunization rates, malnutrition, water & sanitation.

UNFPA (http://www.unfpa.org): The *State of the World Population, 1997* is accessible for downloading from this site, however the extensive set of tables and figures are in Acrobat *pdf* format and require a lot of time even for fast computers.

UNAIDS (http://www.unaids.org): This site contains no data tables or figures. A *Fact Sheet* section contains textual information like an article on *Children and AIDS in Thailand.* Some potentially useful quantitative facts can be found by region under the *HIV/AIDS Figures and Trends* and *HIV Epidemiology*.

UN Dept. of Humanitarian Affairs (http://www.reliefweb.int/docs/descript.html): Access is provided in a Lotus format to the *Financial Tracking Database* which uses a 14 point system for tracking Humanitarian Assistance from Donors globally by country and year.

UNDP (http://www.undp.org): This site is mentioned for what it does NOT contain. UNDP's *Human Development Report* is not yet available via Internet.

FAO (http://www.fao.org): Occasionally, economic and agricultural information is useful to PHN Officers. At the FAO site, there is a database called *FAOSTAT* which provides on-line, time series data on Production, Trade, Food Balance Sheets, Food Aid Shipments, Fertilizer and Pesticides, Land Use and Irrigation, Forest Products, Fishery Products, Population, Agricultural Machinery.

World Health Organization (http://www.who.org): WHO provides a great deal of information via Internet, including a set of very user-friendly PHN database called *WHOSIS* (WHO Statistical Information System).

The database on *Global Indicators, Health for All* is organized by region and country and includes sources, definitions of indicators, trends and reference years. One cannot make direct comparisons between countries.

WHO also maintains a database on mortality that includes rates and causes of death, but information from this database must be obtained by making queries to WHO.

Statistical tools are available through this site including: *International Classification of Diseases, International Classification of Impairments, Disabilities, and Handicaps, JHU's Delta Omega Software, Epi Info, Epi Model, Epi Plan, Epi Map,* and *Binomial Limits Calculations.*

Other Databases.

World Bank (http://www.worldbank.org): This site offers useful textual information, but no databases are directly accessible. Data can, however, be ordered from the site at a cost.

Asian Development Bank (http://www.asiandevbank.org): Provides access to economic data stored by country and ranging from 1978 to 1995.

Macro International (DHS) (http://www2.macroint.com/dhs/): While one can order any of the DHS publications via this web site, electronic versions of the various reports and studies produced under the DHS project are not yet available in electronic form. Data files for country surveys can be downloaded from the web in both hierarchical and rectangular file formats. There is also a useful section entitled "Frequently Asked Questions/Shareware" for those wanting to perform analyses on DHS data. In this section, one can obtain information about: (1) extracting the "child files" from the standard "women's files, (2) running mortality and fertility routines in SPSS or SAS, (3) using SPSS for Windows to analyze exported DHS data, and (4) using a new select utility for creating selected subsets of variables from DHS data files for simplifying analyses.

US Bureau of Census (BUCEN) (http://www.census.gov): International Programs Center provides several information resources of potential value to the PHN Field Officer. There is an International Database of population statistics that is in a text format for easy downloading, The HIV/AIDS Surveillance Database can also be directly downloaded from this web site. Graphic Population Pyramids, a Global Population Database, a full list of BUCEN Publications and Reports and of the contents of the IPC Library, and a few pieces of demographic software are also available. A visit to this site is highly recommended.

Centers for Disease Control (CDC) (http://www.cdc.gov): At this site, one can access NCHS datasets, but a user ID is required. An "Anonymous User ID" can be used for immediate access for occasional users, but CDC requests that frequent users obtain a regular user ID which can be requested from the site.

Medline: This is a National Library of Medicine product which provides access to a wide range of literature in the Health and Medicine fields. Recently, this service became free to the public via the Internet (http://www.nlm.nih.gov/) or one can obtain a CD ROM.

Popline: This compendium of literature on population and family planning literature is a Johns Hopkins product and funded by USAID. The database can be accessed via Internet (http://www.charm.net/~ccp/popwel.html) or a CD ROM can be ordered at no cost. The Internet database is updated on a monthly basis, and the CD is updated every six months.

Management Sciences for Health (MSH) (http://www.msh.org): Some of the websites of USAID CA's contain useful information for PHN Field officers, particularly on tools, methodologies and services available. The MSH site is included here as an example. This site provides information on the analytical tools developed under a number of Population and Health projects.

SateLife (HealthNet) (http://www.healthnetsystems.com): This is a relatively new service whose intent is to improves communications and information exchanges in public health, medicine, and environment fields. Those who wish to keep abreast of the most current issues in these fields may find this site interesting.

PHN Resource Materials Available via Compact Disk.

In addition to the burgeoning Internet, there is a growing body of PHN information available on Compact Disks. Many or these resources are free or at a nominal cost. As previously noted, World Bank, Popline, Medline, and CDC all provide databases of information via CD- ROM. Through a special arrangement with the American Public Health Association (APHA), the ANE Bureau has purchased and made available to each mission in the region, a CD-ROM of the *Control of Communicable Diseases Manual.* The CD-ROM prepared by the ANE Bureau for this conference is, in part, an example of how

this technology can be used to pull together a range of resource materials and tools for quick and easy access. CD technology also is being used by the ANE Bureau to archive paper files to save space, eliminate physical deterioration and improve retrieval time. This may be a strategy that some Missions may want to consider in the future.

Analytical Services

Often, the PHN Field Officers lack the time to gather and analyze data themselves. Fortunately, several USAID-funded projects offer PHN analytical services to the field, and can provide almost anything from answering a question about a specific indicator or statistic to providing in-country technical assistance on data gathering, data analysis, or results reporting and strategic planning. These services can be particularly useful in helping to manage the annual R4 process, and in many cases, assistance can be obtained with a simple phone call or email.

Most of the analytical services available tend to be project- or type-specific. Analytical services provided by the BASICS and FPMD projects, for example, are linked to specific activities related to those projects. The POLICY project offers a wide range of analytical services relative to the design and implementation of national population policies. BUCEN focuses on demographic and socioeconomic research services including: (1) population projections and trends for all countries and selected subnational areas; (2) tracking and projecting HIV/AIDS prevalence and assessing demographic consequences; (3) economic and social status of populations in transition to market economies; and Role and status of women. There are also several projects that specialize in the areas of strategic planning, performance monitoring, and evaluation like the Evaluation Project, POPTECH, and CIHI.

To list all of the possible analytical services available to PHN Field Officers through the CA community is beyond the scope of the present paper. The preceding examples are intended merely to illustrate the range of options available. PHN Officers are encouraged to shop around--via the Internet, perhaps--to find what they need in analytical services.

Graphic Services

Earlier in the paper, graphic presentation software was discussed. Learning to use these tools will enhance the PHN Officer's analytical skills as well as enhancing the ability to effectively communicate ideas to others. However, field officers may sometimes lack time, information, or technical resources to prepare really dynamic presentations. Some CA's, therefore, offer graphic presentation services to the Field upon request. CIHI, for example, is available to assist any mission with the preparation of graphics for textual or audio-visual presentation. Thanks to email, data and graphics can be transferred back and forth between Mission and Washington virtually free and at lightening speed.

The ANE CD-ROM also includes a sampling of charts and diagrams from CIHI's Graphics Presentation Library (GPL). This library, started just this year, currently contains over 300 graphics that have been used one or more times in a USAID/PHN presentation or publication. The elements are organized by type and topic to make it relatively simple for you to find the right charts for your presentation. The subset of charts included on the CD-ROM are those currently existing which would be most likely useful to the PHN Field Officer. Through PowerPoint, users can directly access these charts, edit them as needed and integrate them into a presentation. If PowerPoint is not available, the charts can be accessed and printed exactly as they appear on screen using a web browser (*Netscape Navigator* or *Microsoft Explorer*) with the *Quick View Plus* plug-in which is included on the CD-ROM.

Essential Hardware and Software Configurations

Here are our thoughts on the IT essentials for working smarter and faster as of mid-1997.

Computer 133mHz or better Pentium w/32mb RAM, min. 1gb HD, CD-ROM. Extra RAM above 16mb is essential for the more powerful operating systems (e.g., WindowsNT), and is highly desirable with Windows95 as it will make your programs run faster with much less disk swapping. RAM memory is relatively inexpensive these days (big price drop).

Monitor 17" SVGA (800x600) for serious work. You can, of course, get by with a smaller monitor, but at 800x600 resolution, it's hard on the eyes.

UPS a good uninterruptable power supply to protect hardware is especially important in the overseas environment where power fluctuations occur.

Zip Drive A zip drive is becoming ubiquitous and essential. Removable zip disks hold 100 mb of information and are about the size of a 3.5" floppy.

O/S NT 4.0 or Windows95 (super power users: UNIX or OS/2 Warp 4)

Modem v34 or X2 technology (33.6 to 56 kbps), internal or external

Software

Corel Office Suite 8 (*WordPerfect, Quattro Pro*, etc.) and/or MSOffice97 Professional (*Word, Excel, Access, PowerPoint*)

Netscape *Explorer* or Microsoft *Navigator* (web browsers)

Eudora Pro 3.0 for e-mail (or your own office's e-mail client)

Quickview Plus Plugin for *Navigator* or *Explorer*

Utilities *PKZIP/UNZIP*, or *WinZip* (better because it supports long filenames and multiple zip formats)*;* some good antivirus protection (e.g., McAfee or Norton); *Norton Utilities* (esp. for NT4.0 users)*; PostIt Notes from 3M; Disk Copy* and *Partition Magic* (from PowerQuest Corp).

Presentation LCD projector, minimum 300 lumens, 800x600 native resolution. Good ones cost $7-10 thousand on the street (mid-1997).

Footnotes:

1. The Internet was developed originally by the Department of Defense and the National Science foundation, beginning in 1969 with the linking of four computers. There are now well over 30 million computers linked to the Internet on a part-time or full-time basis.

2. There are certain limitations on file attachments, depending on installed software, Internet Provider capability, file size, etc.

3. LAN = local area network (like those in USAID and the larger missions).

WAN = wide area network, similar to the one which connects many USAID missions to USAID/Washington.

4. See the final section of this paper in which minimum hardware/software configurations are discussed.

5. Hypertext Markup Language

6. Microsoft Office, Corel Word Perfect Suite, Lotus Smartsuite

7. Geographic Information System